at least one metabolic waste product of the metabolic-waste product group including but not limited to carbon dioxide and ammonia.

6. The method of claim **1**, wherein

stopping the flow of the inhalant through the exposure chamber when the inhalant concentration is in a first specified inhalant-concentration range includes reducing an input air flow down to substantially only that necessary to operate an inhalant characterization device.

7. The method of claim **6**, wherein said stopping the flow of the inhalant through the exposure chamber when the inhalant concentration is in a first specified inhalant-concentration range comprises:

substantially stopping an exhaust flow.

8. The method of claim **1**, wherein said stopping the flow of the inhalant through the exposure manifold when the inhalant concentration is in a first specified inhalant-concentration range comprises:

substantially stopping an exhaust flow.

9. The method of claim **1**, wherein stopping the flow of the inhalant includes substantially stopping an air flow into the exposure chamber.

10. The method of claim **9**, wherein substantially stopping the air flow includes allowing sufficient air flow to allow for measurement of the inhalant concentration.

11. The method of claim **1**, wherein stopping the flow of the inhalant includes substantially stopping an air flow into and out of the exposure chamber.

12. The method according to claim **1**, further comprising inserting a plurality of animals through animal ports in the exposure manifold such that the animals are exposed to the inhalant in the exposure manifold.

13. The method of claim **1**, wherein the flow of inhalant passes through the exposure chamber into an exhaust.

14. The method of claim **1**, further comprising removing the plurality of animals from the exposure chamber after completion of the exposure, and

wherein at least one repeating occurs prior to removal of the plurality of animals.

15. A computer-readable medium having computer-executable instructions for performing the method steps recited in claim **1**.

16. A system comprising:

means for starting a flow of an inhalant having at least one non-ambient constituent through an exposure manifold;

means for determining an inhalant concentration of the inhalant in the exposure manifold;

means for stopping the flow of the inhalant through the exposure manifold when the inhalant concentration is in a first specified inhalant-concentration range;

means for determining a metabolic waste product concentration in the exposure manifold;

means for operating said starting means, said determining means, and said stopping means when the metabolic waste product concentration is in a first specified range.

17. The system of claim **16**, wherein the metabolic waste product concentration comprises:

a biological waste product concentration greater than or equal to a specified threshold concentration.

18. The system of claim **16**, wherein the metabolic waste product comprises:

at least one metabolic waste product of the metabolic-waste product group including but not limited to carbon dioxide and ammonia.

19. The system of claim **16**, wherein said means for stopping the flow of the inhalant through the exposure manifold when the inhalant concentration is in a first specified inhalant-concentration range comprises:

means for reducing an input flow down to substantially only that necessary to operate an inhalant characterization device.

20. The system of claim **16**, wherein said means for stopping the flow of the inhalant through the exposure manifold when the inhalant concentration is in a first specified inhalant-concentration range comprises:

means for substantially stopping an exhaust flow.

21. The system according to claim **16**, further comprising means for exposing a plurality of animals.

22. The system of claim **16**, further comprising an exhaust connected to said exposure chamber.

23. A method comprising:

exposing at least one animal to the atmosphere contained within an exposure chamber;

starting a flow of an inhalant having at least one non-ambient constituent into the exposure chamber;

exhausting the exposure chamber;

measuring an inhalant concentration of the inhalant in the exposure chamber;

stopping the flow of the inhalant and exhausting of the exposure chamber when the inhalant concentration is above an upper concentration limit;

repeating said starting, exhausting, and stopping when the inhalant concentration is below a lower concentration limit;

determining a metabolic waste product concentration in the exposure chamber; and

repeating said starting, exhausting, and stopping when the metabolic waste product concentration is above a predetermined metabolic waste product threshold; and

wherein a static inhalation study occurs once the inhalant concentration has exceeded the upper concentration limit and until at least one of the inhalant concentration is below the lower concentration limit, metabolic waste product threshold is exceeded, or an exposure level has been determined to have been reached or will be reached once the exposure chamber is flushed; and other times a dynamic inhalation study occurs.

* * * * *